

# Mercury TMDL's and Permitting Issues

Taconite Industry Cost Reduction  
Initiative

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# Outline

- TMDL's or EPA Listing Category 4b
  - Background
  - Mercury TMDL's
  - Category 4b
- Permitting
  - Background
  - Statewide/Multi-discharger Variance
  - Other Approaches

# Definitions

- Impaired Water – Water-body where ambient levels exceed numeric or narrative Water Quality Standards (WQS) for a specific pollutant.
  - Water column
  - EPA Fish Tissue Criterion (.3 mg/kg)
  - Fish tissue (MN Dept. of Health)



# Definitions (Cont.)

- Section 303(d) List – Clean Water Act requirement that States must submit to EPA a list of waters within the state which do not meet numeric or narrative WQS.
  - Currently submitted every 2 years
  - Last submitted 2002
  - Planning for 2004 submittal underway
    - Due 4/1/04
  - 2004 Integrated 303(d)/305(b) Report ????

# Definitions (Cont.)

- 305(b) Report – Report the MPCA submits to EPA assessing the quality of the State's waters
  - Currently submitted every 5 years
  - Last submitted ????
  - Approximately 10 % of Minnesota's waters have been assessed
    - 5% Stream miles
    - 12% Lakes

# Definitions (Cont.)

- Integrated Water Quality Monitoring and Assessment Report – EPA guidance to the States for integrating the development and submission of 305(b) water quality reports and Section 303(d) lists of impaired waters
  - Guidance issued November 19, 2001
  - 5 part list



# Definitions (Cont.)

- TMDL – Process which establishes a load reduction strategy to bring the impaired water-body or watershed into compliance with WQS
  - wasteload allocations for point sources
  - load allocations for non-point sources
  - margin of safety
  - future growth component

# Impaired Water Regulatory Impact

- Once a water-body is considered impaired **“no new or increased discharges”** are allowed for the pollutant causing the impairment until a TMDL or reduction strategy has been established.
  - e.g. restrictions on: residential development, increased industrial and municipal capacity, impervious surfaces, new facilities etc.



# Impaired Water Regulatory Impact (cont.)

- Once a TMDL or reduction strategy is in place “new or increased discharges” are possible by:
  - demonstrating a continued downward trend in pollutant levels (increase is de minimis, maintains continued progress.)
  - demonstration that water quality standards will be attained within a reasonable period of time.

The background of the slide is a photograph of a sunset or sunrise over a body of water. The sky is a deep blue with wispy white clouds. A bright, colorful rainbow is visible on the left side of the image, arching over the water. The water's surface is dark blue with gentle ripples.

# Minnesota Mercury Water Quality Standards (WQS) and Impaired Waters

# Minnesota's Mercury WQS

- Great Lakes Basin
  - 1.3 ng/l (Wildlife based)
  - Background levels mainly above standard
- Statewide
  - 6.9 ng/l (Human Health based)
  - Background levels generally lower than standard
- Rainfall (Comparison)
  - 10-12 ng/l



# Mercury Sources

- Atmospheric Deposition
  - International and National
  - Estimated between 80 – 90 % from global sources
  - 10's to 100's of LBS/facility/year
- Water Discharges
  - Tenths to hundredths of LBS/facility/year
- Products
  - Switches, Thermometers, Bulbs, etc.

# Minnesota

## Mercury Impaired Waters

- Great Lakes Basin (WQS = 1.3 ng/l)
  - Numerous waters listed on 2002 Impaired Waters List
  - Most, if not all, waters will have water column exceedances
  - Once EPA Fish Tissue Criterion promulgated into MN WQS numerous exceedances expected
  - MDH Fish Advisories for all tested waters expected
  - Most waters listed based on fish advisories
  - Atmospheric deposition major source
    - International and National

# Minnesota

## Mercury Impaired Waters

- Statewide (WQS = 6.9 ng/l)
  - Few waters listed on 2002 Impaired Waters List
  - Most waters will meet water column except during wet weather events
  - Once EPA Fish Tissue Criterion promulgated into MN WQS numerous exceedances expected
  - MDH Fish Advisories for most, if not all, tested waters expected
  - Most waters listed based on fish advisories
  - Atmospheric deposition major source
    - International and National





# Mercury TMDL's

# Mercury TMDL's

- National Concerns
  - Are mercury impaired waters suitable for TMDL development (EPA/ECOS/Quicksilver)?
  - Atmospheric deposition (major source): who and how should it be handled?
  - Source identification and level of contribution?
  - What is the appropriate endpoint (fish tissue, water column, fish advisories)?
  - Water-body specific, watershed or regional TMDL's
    - Pre/Post TMDL Permitting?
  - NPDES/TMDL Permitting?

# Minnesota's Mercury TMDL Timeline

- TMDL completion scheduled for 2015
  - Gross load allocations for point and non-point sources
  - Implementation plan would follow
    - Identification of individual non-point and point source loads
    - Specific loads designated in NPDES permits
    - ?? Years
    - No New or Increased Discharge remains in effect until ?? year



# MN TMDL Timeline

## Impact on New or Increased Discharges

- Future growth restricted/prohibited as individual facilities would each be required to:
  - Demonstrate downward trend in mercury levels (air, water, fish tissue, sediments, etc.);
  - Describe control requirements and authorities that require them;
  - Estimate of reductions that will occur;
  - Schedule of when required measures will be implemented;
  - Estimate when WQS will be attained; and
  - Develop a plan to monitor the time to attain WQS.

# MN TMDL Timeline

## Impact on New or Increased Discharges

- Individual Facilities must develop the equivalent of an EIS
- Agency Review requires Citizen Board decision

# Integrated Water Quality Monitoring and Assessment Report

5 Part Listing Guidance



# 5 Part Listing Guidance

- Category 1 – Waters attaining WQS and no use threatened.
- Category 2 – Attaining some designated uses; no use threatened; insufficient or no data/information available to determine if remaining uses are attained or threatened.
- Category 3 – Insufficient or no data/information to determine if any designated use is attained.

# 5 Part Listing Guidance

- Category 4 – Impaired or threatened for one or more use but does not require TMDL development.
  - A. TMDL has been completed.
  - B. Other pollution control requirements are reasonably expected to result in attainment of WQS in the near future.
  - C. Impairment not caused by pollutant

# 5 Part Listing Guidance

- Category 5 – WQS is not attained. Impaired or threatened for one or more designated use by a pollutant and requires a TMDL.



# Category 4b Listing Requirements

- Demonstrate downward trend in mercury levels (air, water, fish tissue, sediments, etc.);
- Describe control requirements and authorities that require them;
- Estimate of reductions that will occur;
  - Schedule of when required measures will be implemented;
- Estimate when WQS will be attained; and
- Develop a plan to monitor the time to attain WQS.

# Advantages of Category 4b versus TMDL's

- provide short term flexibility to permit new/increased discharges
- demonstrated ability to maintain progress towards attainment of WQS
- immediate focus on reduction efforts
- focus on what we can impact (local reductions)
- consistent with and supplements ECOS/Quicksilver objectives (A plan is in place)
- provides incentive for cooperative efforts
- Efficient use of scarce resources
- TMDL's still an option (Category 5)

# Disadvantages of Category 4b versus TMDL's

- Breaking new ground
- Not a Slam/Dunk



# 4b Implementation Strategy

- Cooperative effort
  - MPCA/TICRI/Industry
  - Others ??
- Discussions with EPA
  - Headquarters/Region ??
  - Timing – soon
- Submittal Timeframe
  - No later than 4/1/04

# Basis for a Minnesota Category 4b Demonstration

- Keys concepts
  - Minnesota has been a national leader in development and implementation of mercury reduction efforts (MMRI).
  - Atmospheric reductions left to EPA and International community.
  - EPA has provided ability to estimate reductions  
e.g. Mercury Maps, Other EPA Mercury TMDL's,

# Basis

## Category 4b Demonstration (cont.)

- Atmospheric Deposition addressed through
  - International efforts
  - National efforts
    - MACT/Clear Skies



# Basis

## Category 4b Demonstration (cont.)

- Voluntary/Regulatory efforts
  - Regional
    - Lake Superior Binational Program
    - Great Lakes Binational Toxics Strategy
    - Lakewide Area Management Plans (LaMP's)
    - Areas of Concern (AOC's)

# Basis

## Category 4b Demonstration (cont.)

- Voluntary/Regulatory efforts (cont.)
  - State and Local Framework exists
    - Minnesota Mercury Reduction Initiative
    - Voluntary agreements
    - Local plans (i.e. WLSSD)
    - Local residential and industrial collection efforts
    - Most sectors involved in some manner
    - Industries engaged in researching technological controls

# Basis

## Category 4b Demonstration (cont.)

- Regulatory efforts will continue to protect resources
  - Existing state regulations
  - Product bans
  - Pollutant minimization plans
    - Great Lakes Basin
  - Expand mercury monitoring to all water dischargers



# Basis

## Category 4b Demonstration (cont.)

- Monitoring Plans and Indicators exist or are under development
  - LSBP, GLBTS, LaMP's, AOC's
  - Water column, fish tissue, sediment, atmospheric, products, etc.
  - Minnesota Emission Inventory

# Basis

## Category 4b Demonstration (cont.)

- Schedules for Attainment
  - Addressed within program areas
  - Based on determination of source and contribution
  - Dependent on atmospheric timelines (International and National)
  - Reasonable timeframe for mercury?

# Statewide/Multi-discharger Variance Provision



# Definitions

- Variance - Process by which the MPCA, upon application of the responsible party, may grant a variance from a water quality standard. Granted under exceptional circumstances:
  - that strict enforcement of any provision of a standard would cause undue hardship,
  - is necessary for the public health, safety, or welfare;
  - that strict conformity with the standards would be unreasonable, impractical, or not feasible under the circumstances.
  - EPA will be advised of any permits which may be issued under this clause.

# Permitting Guidance

- NPDES water discharge permitting guidance exists
- EPA pre-TMDL mercury permitting guidance lacking
- EPA's Watershed Rule is silent on NPDES/TMDL permitting

# Current MPCA NPDES Mercury Permitting Policy

- Draft permitting policy developed in 2000 – never finalized
- First NPDES Cycle: Require effluent low level mercury monitoring
  - Major Facilities, Utilities and Taconite facilities only
- Second Cycle: Establish effluent limit (Interim/Final)
  - Facilities are approaching this phase
- Third Cycle: ????



# NPDES

## Mercury Permitting Policy Issues

- If effluent limit is not attainable options are:
  - Request individual variance
  - Source Reduction
  - Install control technology
    - Reverse Osmosis, Ion exchange, Zero Discharge
      - Low flows
    - Cost prohibitive
      - Ohio Findings Statewide economic showing

# NPDES Mercury Permitting Policy Issues (cont.)

- All evidence supports point source discharges are *de minimis* sources of mercury
  - < .2 lb/year/facility

# NPDES Permit Recommendation

- Amend Minnesota Rules (7050 and 7052) to include a Statewide or Multi-Discharger Variance
  - Most facilities will need variances
    - Municipals might be an exception (WLSSD)
  - Variances will need to be renewed
  - Other GLI States have such a provision
    - Ohio (EPA Formally Approved) and Michigan
    - Indiana (possible proposal during tri-ennial review)
  - **Efficient use of scarce resources**
  - **Provides flexibility as we move in the right direction**



# Other Factors

## Supporting Variance Provision

- Basic assumption is standard and designated use are attainable
- Applicable endpoint uncertainty
  - Water Column (HH or Wildlife)
  - Fish Tissue
  - Fish Advisory
- Impact of reductions from other programs on attainment of WQS
  - Atmospheric deposition
  - Non-point source

# Other Factors

## Supporting Variance Provision (cont.)

- Relationship of wasteload and load allocations developed through TMDL process and NPDES permitting is undefined – guidance lacking
  - Anti-backsliding (uncertainty)

# Other Factors

## Supporting Variance Provision (cont.)

- Phased TMDL's
- Impact of listing in Category 4b on permitting process is undefined
  - Uncharted territory
- Trading Program Development ??



# Other Factors

## Supporting Variance Provision (cont.)

- National Academy of Sciences has acknowledged that standards/designated use review should be part of the impaired waters/TMDL process (Assessing The TMDL Approach To Water Quality Management 2001)
- The U.S. General Accounting Office and States recognize the need for improved EPA guidance to better target cleanup efforts (Report GAO-03-308)

# Other Approaches

- Compliance Schedules
  - Use of interim and final effluent limits